

AG Contract No. KR05-0949TRN
ADOT ECS File No. JPA 05-092
Project No.: STP-066-A(033)
Project: ASU Research Projects
Thin White Topping
Section: Andy Devine TI
TRACS No: H6142 01C
BUDGET SOURCE ITEM NO.: 19406

INTERAGENCY SERVICE AGREEMENT

BETWEEN
THE ARIZONA DEPARTMENT OF TRANSPORTATION
AND
THE ARIZONA STATE UNIVERSITY

THIS AGREEMENT is entered into this date October 31, 2005, pursuant to the Arizona Revised Statutes § 11-951 through 11-954, as amended, between the STATE OF ARIZONA, acting by and through its DEPARTMENT OF TRANSPORTATION (the "Sponsor") and the ARIZONA BOARD OF REGENTS, acting for and on behalf of ARIZONA STATE UNIVERSITY, (hereinafter called "University").

RECITALS

WHEREAS the Sponsor is empowered by Arizona Revised Statutes Section 28-401 to enter into this Agreement and has delegated to the undersigned the authority to execute this Agreement on behalf of the Sponsor.

WHEREAS the University is empowered by Arizona Revised Statutes Section 15-1626 to enter into this Agreement and has delegated to the undersigned authority to execute this Agreement on behalf of the University.

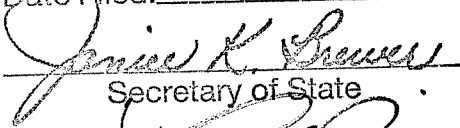
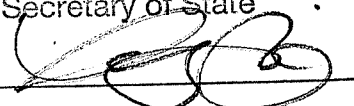
WHEREAS Sponsor desires that the University perform certain services as described in the Scope of Work, attached hereto and incorporated herein as Exhibit "A", and the University desires to perform such services upon and subject to the terms and conditions hereinafter set forth.

NOW, THEREFORE, the parties agree as follows:

ARTICLE I. SCOPE OF WORK The University shall use all reasonable efforts to perform the services and deliver any reports or other items specified in Exhibit "A", attached hereto.

ARTICLE II. PROJECT DIRECTOR The University shall provide Dr. Kamil Kaloush, Department of Civil and Environmental Engineering as Project Director for work under this Agreement. The Project Director shall not be replaced without prior consent of Sponsor.

ARTICLE III. PERIOD OF PERFORMANCE This Agreement shall begin on November 10, 2005 and shall terminate on November 10, 2006. This Agreement may be modified or extended at any time by mutual written consent of both parties.

NO. 27814
Filed with the Secretary of State
Date Filed: 10-31-05

Secretary of State
By: 

ARTICLE IV. SPECIAL PROVISIONS

1. **Compensation.** Compensation shall be on a firm-fixed-price basis. Sponsor shall pay the University a lump sum amount of \$40,000.00 for the University's services hereunder. Sponsor shall remit not less than fifty-percent (50%) (\$20,000.00), of the total contract price upon execution by both parties of this Agreement. The remaining amount of the contract price (\$20,000.00), due under this Agreement shall be paid no more than monthly, upon receipt of invoices. Invoices are due and payable within thirty-days (30).
2. **Publications.** Sponsor recognizes that under the University policy the results of work performed under this Agreement must be publishable and agrees that the University and its employees and students engaged in work under this Agreement shall be free to present at symposia or professional meetings, and to publish in journals, theses or dissertations, or otherwise of their own choosing, methods and results of the work performed under this Agreement. Upon written request by Sponsor, copies of proposed manuscripts will be furnished to Sponsor for review prior to publication. In no event will the University delay publication for more than thirty (30) days from date of submittal of manuscript for Sponsor review.
3. **Notices.** All notices under this Agreement given by either party to the other shall be in writing and shall be sent by U.S. Postal Service, first class, facsimile or e-mail. Addresses are as follows:

For the University: Office for Research & Sponsored Projects Admin.

Arizona State University
P.O. Box 873503
Tempe, Arizona 85287-3503
Phone: 480-965-0029

Ms. Meghan McKendry
e-mail: Megahn.McKendry@asu.edu
cc: Kamil Kaloush
Department of Civil and
Environmental Engineering
Fax: 480-965-8013

For Contracting:

Arizona Department of Transportation
Joint Project Administration
205 S. 17th Avenue, Mail Drop 616E
Phoenix, Arizona 85007
Fax: 602-712-7424

For Sponsor:

ADOT Kingman Construction
3660 E. Andy Devine
Kingman, Arizona 86401
Phone: 928-681-6010
Fax: 928-757-1269

4. Intellectual Property.

a. **Inventions.** The University and Sponsor shall own all rights, title, and interest in and to all inventions, discoveries, formula, processes or procedures first made or conceived or first reduced to practice by the University personnel in the performance of work under this Agreement, and all patents or other proprietary rights thereto. If the University and Sponsor decides to file a patent application or applications pertaining to the work under this Agreement, Sponsor agrees to cooperate and assist the University with the filing, as may be reasonably requested by the University, and to maintain confidentiality of the results of the work as necessary to facilitate the patent application. All patents shall be filed in the name of or be assigned to the University and Sponsor.

b. **Copyrights.** The University and Sponsor shall own all rights, title and interest in and to any and all copyrights or copyrightable material, including software programs, first produced, composed, or fixed in any tangible medium of expression in the performance of work under this Agreement, and the University and Sponsor shall joint the rights to determine the disposition of all or any thereof.

5. **Confidentiality.** The University shall not be responsible for the protection of confidential or proprietary information.

ARTICLE V. GENERAL PROVISIONS


1. **Entire Agreement.** This Agreement embodies the entire understanding of the parties and supersedes any other Agreement or understanding between the parties relating to the subject matter. The parties agree that should any part of this Agreement be held to be invalid or void, the remainder of the Agreement shall remain in full force and effect and shall be binding upon the parties.
2. **Waivers.** No waiver, amendment or modification of this Agreement shall be valid or binding unless written and signed by the parties. Waiver by either party of any breach or default of any clause of this Agreement by the other party shall not operate as a waiver of any previous or future default or breach of the same or different clause of this Agreement.
3. **Assignment.** Neither party may assign any rights hereunder without the express, written, prior consent of both parties.
4. **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Arizona.
5. **Cancellation for Nonappropriations.** The parties recognize that performance by the University depends upon appropriation of funds by the State Legislature of Arizona. If the Legislature fails to appropriate the necessary funds, or if the University's appropriation is reduced during the fiscal year, the University may reduce the scope of this Agreement if appropriate or cancel this Agreement without further duty or obligation. the University agrees to notify Sponsor as soon as reasonably possible after the University knows of the loss of funds.
6. **Conflict of Interest.** This Agreement is subject to the provisions of A.R.S. 38-511. The State of Arizona may cancel this Agreement if any person significantly involved in negotiating, drafting, securing or obtaining this Agreement for or on behalf of the Arizona Board of Regents becomes an employee in any capacity of any other party or a consultant to any other party with reference to the subject matter of this Agreement while the Agreement or any extension thereof is in effect.
7. **Independent Contractor.** The University is an independent contractor and shall be free to exercise its discretion and independent judgment as to the method and means of performance of its work hereunder. The University employees shall not be considered employees of Sponsor, and neither the University nor Sponsor personnel will, by virtue of this Agreement, be entitled or eligible, by reason of this Agreement, to participate in any benefits or privileges given or extended by the other party to its employees.
8. **Termination.** Either party may at any time terminate this Agreement by giving the other party not less than thirty (30) days prior written notice. In the event this Agreement is canceled by Sponsor, Sponsor shall remain responsible for payment to the University for all work performed through the date of termination and for reimbursement to the University of all non-cancelable commitments incurred in the conduct of the research. Non-cancelable commitments shall include employment commitments to the University personnel through the end of the semester following any such termination by Sponsor. In the event the University terminates this Agreement any unused funds from the advance will be returned.

9. **Arbitration.** In the event of any dispute, claim, question, or disagreement arising from or relating to this Agreement or the breach thereof, the parties hereto shall use their best efforts to settle the dispute, claim, question, or disagreement. To this effect, they shall consult and negotiate with each other in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both parties. If they do not reach such solution within a period of 60 days, then, upon notice by either party to the other, all disputes, claims, questions, or differences shall be finally settled by arbitration administered by the American Arbitration Association in accordance with the provisions of its Commercial Arbitration Rules.
10. **Insurance.** The University maintains general liability insurance and worker's compensation coverage as required by state law and pertinent federal laws and regulations under the State of Arizona Risk Management Plan.
11. **Liability.** It is understood that neither party to this Agreement agrees to indemnify the other party or hold harmless the other party from liability hereunder.
12. **Nondiscrimination.** The parties agree to comply with all applicable state and federal laws, rules, regulations and executive orders governing equal employment opportunity, nondiscrimination and affirmative action.
13. **News Release.** Sponsor may not use the name of the University in news releases, publicity, advertising, or other promotion, without the prior written consent of the University, except for documents used for internal consumption by Sponsor.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by its duly authorized representatives on the respective dates entered below.

ARIZONA BOARD OF REGENTS

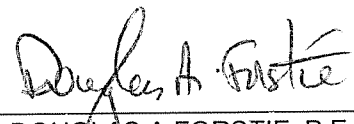
For And On Behalf Of
Arizona State University

By: 
CHERYL L. CONOVER
Director, Research Administration

Date: 9/26/15

STATE OF ARIZONA

Dept. Of Transportation

By: 
DOUGLAS A. FORSTIE, P.E.
Deputy State Engineer

Date: _____

PROJECT DIRECTOR APPROVAL

I have reviewed the terms of this contract and they are acceptable to me. I request that an authorized signatory execute this contract on behalf of the university.

By: 
KAMIL KALOUSH

Exhibit A

**Laboratory Evaluation of ADOT's Thin Whitetopping PCC
Test Sections – I-40 Andy Devine TI**

Submitted to

**Materials Group
Arizona Department of Transportation
1221 North 21st Avenue
Phoenix, Arizona 85009**

Submitted by

**Ira A. Fulton School of Engineering
Department of Civil and Environmental Engineering
Tempe, Arizona 85287-5306**

August 04, 2005



Project Summary

Research Agency: Arizona State University
Ira A. Fulton School of Engineering
Department of Civil and Environmental Engineering &
Sustainable Materials and Renewable Technologies (SMART)
Tempe, Arizona 85287-5306

Principal Investigator: Kamil E. Kaloush, Ph.D., P.E., Asst Professor
Phone: (480) 965-5509, Fax: (480) 965-0557
E-mail: kaloush@asu.edu

C0- Principal Investigators: Barzin Mobasher, Ph.D., P.E., Professor
Phone: (480) 965-0141, Fax: (480) 965-0557
E-mail: barzin@asu.edu

Jay Golden Ph.D., SCPM, REA, Director, SMART Program
Phone: (480) 965-4951, Fax: (480) 965-8087
E-mail: Jay.Golden@asu.edu

ADOT Contact: Ali Zareh, P.E., Senior Design Engineer
Materials Group
Arizona Department of Transportation
1221 North 21st Avenue
Phoenix, Arizona 85009
Tel: 602-712-8082

Project Cost: \$40,000

Introduction

This project is a continuation of the on-going efforts between the Arizona Department of Transportation (ADOT) and Arizona State University to build a database of typical engineering properties for Portland Cement Concrete (PCC) mixtures used in Arizona. One goal of this effort is to advance the engineering technology and implementation of PCC projects through special laboratory testing activities. These activities support paving processes that combine laboratory research and field performance to ascertain the quality of PCC pavement construction.

Study Objective

The objective of this study is to conduct a laboratory experimental program to obtain typical engineering material properties for ADOT's Thin Whitetopping concrete test sections located in Kingman-Seligman Highway, Andy Devine TI. The types of materials that are anticipated to be sampled from these test sections include: control (conventional mix), Polypropylene and crumb rubber concrete mixtures.

Testing Program

The testing program, shown in Table 1, is aimed at development and verification of the compressive and bending capacity of the concrete and other types of fiber reinforced concrete materials. The ASU Special Tests are included in the ADOT's Materials Design Report #04-39-1.

The mechanical testing and characterization tests will be conducted at the Mechanical Testing Laboratories of Arizona State University. Several load frames ranging from load capacities of 20-110 Kips and equipped with servohydraulic closed loop testing controllers are available. Closed loop testing allows monitoring and control of the response of a system during the test. The specimen deflection will be measured using linear variable differential transformers (LVDT).

Prismatic specimens, 102x102x457 mm, will be obtained from the test sections for three point bending tests. Cylindrical specimens, 75 mm in diameter and 150 mm long, will be used for compression tests.

For the prismatic specimens, a 12.7 mm notch will be cut on the tensile face of the flexural test specimens. The notch will serve to localize the formation of the crack. The deformation across the tensile cracks will be measured and used as the feedback signal to the test machine.

In addition tests will be conducted to calculate the coefficient of thermal expansion of concrete specimens. This is viewed as very important task to obtain typical ADOT coefficient of thermal expansion that can be used as input for the 2002 Design Guide. A series of restrained shrinkage specimens will be manufactured using the current mix designs. The response of concrete subjected to restrained shrinkage will be documented by monitoring the strain in the concrete samples as a function of time.

Table 1. Scope of the Testing Program

Test	# of mixes	Thermal Property	Shrinkage test	Mechanical Properties		
Specimen Type		Thermal expansion test	Restrained shrinkage	Flexural test, Toughness	Compressive Stress-strain	Ring specimen
Specimen Size		4x8 in cylindrical	16 in diameter 2" thick	4x4x16 in	3x6 in cylindrical compression	24 in diameter, 3 inch thick
Properties measured		Coefficient of thermal expansion	Stress strain shrinkage and cracking potential	Stiffness, flexural strength, toughness, stress-crack opening relationship	Stiffness, compressive strength, toughness, stress-strain, Poisson's ratio, Strain softening parameters	Ductility, new ASTM procedure
Control	1	3 replicates	1 specimen	3 replicates	3 replicates	2 replicates
PP - FRC	1	3 replicates	1 specimen	3 replicates	3 replicates	2 replicates
PP + Crumb Rubber	1	3 replicates	1 specimen	3 replicates	3 replicates	2 replicates
Crumb Rubber	1	3 replicates	1 specimen	3 replicates	3 replicates	2 replicates
Total Required		12	4	12	12	8

- *PP-FRC, 3 kg/m³*
- *Crumb Rubber Section may be replaced with a steel fiber section*

An experimental study will be also conducted to evaluate the restrained shrinkage cracking in plain and modified reinforced concrete. A restrained shrinkage test configuration has been recently adopted to measure the susceptibility of concrete mixtures to cracking. This procedure is referred to as AASHTO PP34-99. The experiment utilizes a constant humidity chamber holding the restrained shrinkage specimens. The chamber is subjected to constant flow of air around the specimens. The strain in the restraining steel and the crack width in the concrete samples were monitored continuously. The experimentally obtained results are affected by geometry of the specimen, the humidity and shrinkage conditions, and the restraint offered by stiffness of the steel ring.

Final Report

Upon completion of all work activities, a written report detailing the results of the findings will be prepared and submitted. The project activities are anticipated to be completed within 12 months from the time the mixes are sampled by ASU. The project construction is anticipated to start in November, 2005.

Study Cost

The cost to conduct the work detailed in this proposal as outlined in ADOT's Advertisement for Bids is a lump sum of \$40,000 paid according previously agree upon JPAs between ADOT and ASU.



TERRY GODDARD
Attorney General

OFFICE OF THE ATTORNEY GENERAL
STATE OF ARIZONA

CIVIL DIVISION
TRANSPORTATION SECTION
Writer's Direct Line: 602.542.8855
Facsimile: 602.542.3646
E-mail: Susan Davis@azag.gov

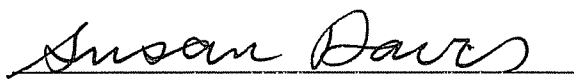
INTERAGENCY SERVICE AGREEMENT
DETERMINATION

A.G. Contract No. KR05-0949TRN (**JPA 05-092**), an Agreement between public agencies, i.e., The Arizona Department of Transportation and The Arizona State University, has been reviewed pursuant to A.R.S. § 11-952, as amended, by the Undersigned Assistant Attorney General who has determined that it is in the proper form and is within the powers and authority granted to the State of Arizona.

No opinion is expressed as to the authority of the remaining Parties, other than the State or its agencies, to enter into said Agreement.

DATED: October 20, 2005

TERRY GODDARD
Attorney General


SUSAN E. DAVIS
Assistant Attorney General
Transportation Section

SED:mjf:930686
Attachment